

on September 19, 1918, my wife called my attention to an albino of this bird at our gate and upon my seeing it I went for my gun to procure it, as it was the first perfect albino, of a Mockingbird, I had ever seen alive in my life. Just as soon as the bird observed my intentions, it at once became exceedingly shy and although I followed it until long after sunset I could not even get within range of it at any time. I, however, saw it go to roost in a thick live oak tree in our yard among about eight or ten more birds of the same species; I then set the alarm clock to go off before sunrise hoping to secure it in the morning, which I did, shooting it from one of our fig trees. The specimen is a young male of the year which was undoubtedly raised in our yard, but escaped my notice. It is entirely white with an ashy tinge to all the feathers, and was in moult, the new feathers being pure white.

I have invariably found albinos or albinistic specimens of birds exceedingly shy, this is not because the desire of possession is very keen with the collector, but because albinos are naturally shy. This is the first Mockingbird I have shot since 1879 or 1880, when I collected several for my late friend Dr. Gabriel E. Manigault, to form a group representing Audubon's plate for the Charleston College Museum.

Mt. Pleasant, S. C.

THE STATUS OF THE SUBSPECIFIC RACES OF *BRANTA CANADENSIS.*

BY J. D. FIGGINS.

THE need of specimens of *Branta canadensis hutchinsi* and *Branta c. occidentalis* recently prompted a critical examination of nearly forty specimens of this genus; and while it was not productive of an example that was not more obviously referable to true *canadensis*, it was of interest because of its exciting a doubt concerning the validity of the above subspecific forms. Several of the specimens reveal one or more measurements that are credited to one or the other of the varieties, but the length of the wing or culmen invariably places them well above the limits of either. Besides, it was noted that the color and markings that are supposed to characterize *occidentalis* occur in unmistakable *canadensis* with disconcerting frequency.

Consultation of the several authorities appears to be of scant assistance, other than to reveal an apparent acceptance of the varieties as a means of escaping a troublesome question, or a seeming attempt to defend them upon purely geographical grounds; although this course necessitates a denial of the evidence at hand, questioning of the accounts of authorities of high degree and an appeal to "chances of error" and the "misunderstanding of data."

Although the various authorities disagree to some extent on the measurements of the several subspecific forms, they are unanimous in concluding that *hutchinsi* is smaller than *canadensis* and that *occidentalis* is larger than *hutchinsi*. A critical examination of such statements might lead to the conclusion that *occidentalis* being larger than *hutchinsi*, its measurements would fall within the extremes of *canadensis*. Investigation proves this to be true, if the largest and smallest measurements of the various authors are employed for comparison. Continuing the experiment further, one finds that only .07 of an inch separates the maximum length of the wing of *occidentalis* from *hutchinsi*, according to the early authorities. The statement that *occidentalis* is larger than *hutchinsi*, is, therefore, based on .07 of an inch in the maximum wing measurement — all other wing measurements being within the limits of the latter race.

On page three of 'A Study of a Collection of Geese of The *Branta Canadensis* Group From the San Joaquin Valley, California,' Swarth states, in a discussion of thirty-six specimens considered as *hutchinsi*, "twenty-five are males." Without an explanation of his reasons, he employs but ten of that sex as representative of the differences he describes on page fourteen. It is, therefore, not unreasonable to conclude that the differences he finds in the minimum and maximum measurements of wing, culmen and tarsus, as compared with the findings of other writers, may be due to the elimination of the remaining fifteen males belonging to the series. It is the present writer's experience that the measurements of the tarsus and middle toe obtained from dry skins are not always satisfactory and reliable and consequently some doubt may be entertained as to the importance of Mr. Swarth's comparisons and conclusions. The same authority shows the number of rectrices in *canadensis* varies from 14 to 20. The variation is the same in

occidentalis, while *hutchinsi* is credited with 14 to 18, the type specimen having but 14. The number of tail feathers is, therefore, of very doubtful significance as a diagnostic character.

There remain then, only the color and markings by which *hutchinsi* and *occidentalis* are supposed to be determined.

Referring to the former, Ridgway (Manual of North American Birds, 4th edition, p. 117) confines himself to the statement that it is "smaller" (when compared with *canadensis*). Grinnell, Bryant and Storer, (Game Birds of California, page 230) say: "Practically the same as Canada Goose but size smaller. . . . The Hutchins Goose is simply a slightly smaller 'edition' of the Canada Goose. . . ."

Quoting Baird, (U. S. P. R. Explorations and Surveys, Vol. IX, 1858, p. 766), "In the specimens of Hutchins' Goose before me, I can detect no difference of form from the Canada Goose, excepting in the smaller size and less number of tail feathers."

Coues (Key to North American Birds, 5th edition, Vol. II, p. 904), says "Other individuals run down to wing, 14.75; bill, 1.20; tarsus 2.25; and such probably cannot be distinguished from *minima*, especially from an individual of the latter which happens to have 16 tail-feathers, unless by the color-marks which ordinarily distinguish both *minima* and *occidentalis* from both *hutchinsi* and *canadensis* proper. There is in fact, some question whether Dr. Richardson's original *hutchinsii* type from Melville peninsula, was not what we are now calling *minima*, for it was described; length, 25.00; wing, 14.00; tail, 14-feathered; Breast. . . . all white, etc."; but it might make confusion worse confounded to insist upon the point now."

Again quoting Grinnell, Bryant and Storer, (page 224): "The three subspecies or varieties of 'white-cheeked geese,' (Canada, Hutchins' and Cackling) intergrade with one another, and individuals are occasionally found which cannot be satisfactorily referred to one or the other of these races."

On page 2, Swarth says: "The *hutchinsi* series at hand, (36 specimens), forms a perfect connecting link between *B. c. canadensis* and *B. c. minima*, the gradation between *hutchinsi* and *minima*, in particular being so gradual that several specimens might with equal propriety be placed in either subspecies."

Taking up the color and markings of *occidentalis*, Ridgway

says on page 117; "Lower parts deep grayish brown or brownish gray (often not conspicuously paler than upper parts), abruptly defined against white of anal region; white cheek-patches usually separated by a black throat-stripe, or black mottling on throat; white collar round lower neck usually very distinct."

Grinnell, Bryant and Storer say, (page 225), "The White-cheeked Goose is a large, dark-colored northwestern race. . . ." Baird in describing it states, (page 766) "The name might be taken from the white collar, but for the possibility that this may or may not be always constant."

Coues' description of *occidentalis*, (page 904), is as follows: "Similar to the last, (*canadensis*); of equal size or nearly so, and tail 18-20-feathered. Coloration averaging darker than in the last, on under parts especially, against which the white of anal and crissal region is very well defined. Black of neck bounded below in front by a white half-collar, and white cravat apt to be untied in front making a pair of white cheek-patches. Bill averaging shorter, perhaps never 2.00 along culmen, and tarsus relatively longer. The best samples are well marked; others shade into the common form inextricably."

Referring to Baird's type of *Bernicla occidentalis*, Swarth (page 6), says: "The differences are (1) that the type specimen has a faintly indicated trace of a white half collar at the base of the neck, which none of the Alaskan birds possesses; (2) it has a more nearly continuous line of black spots separating the white cheek patches; (3) it is of a more reddish brown color ventrally. These are all differences which, judging from more extensive series of other subspecies of *canadensis*, may well be due to individual variation, and altogether the Alaskan birds appear to be sufficiently like the type of *occidentalis* to justify the application of that name to the breeding birds of the region where they were secured." Farther on, the same author says: "Of the Alaskan specimens, not one shows even a single white feather at the base of the neck, and while the black throat bar is in three cases faintly indicated by a few black spots, in the remaining five there is not a mark to interrupt the continuity of the white cheek and throat patch. Thus these supposedly characteristic markings are shown to be no more constantly present in the race *occidentalis* than they are in true

canadensis, where a suggestion of such markings occasionally occurs."

This would appear to effectually dispose of *occidentalis* as a subspecific variety. Swarth's contention for a difference in size when compared with *canadensis* is not convincing when he and Baird himself, evidently entertained a doubt as to whether the type specimen is really distinct. The present writer interprets Swarth's description of *occidentalis* as an attempt to justify the continuance of this variation as a subspecies by crediting it as being a more or less resident form inhabiting the Pacific coast from Port Townsend to Prince William Sound, but admits the birds of "extremely dark coloration" are "closer to the range of *minima* and it is fair to believe that these specimens illustrate a step in the gradual transition between the two forms, which probably occurs."

He has shown that the white collar and black stripe on the throat are not diagnostic characters,—being "no more consistently present in the race *occidentalis* than they are in true *canadensis*." The statement that "Of the Alaskan series the Prince William Sound birds are smaller and darker than those of the Sitkan district...." points rather conclusively to gradation through hybridism. It is doubtful if a large number of ornithologists will agree that an unsupported proposal of an *unusual* migration movement warrants assigning such specimens to a subspecific form that makes a second description necessary as a means of coordinating it with a theory.

The literature dealing with the distribution of the genus *Branta* fails to take into account the region lying between Prince William Sound and Bering Sea. This comprises the Kenai Peninsula, Kachamak Bay, Cook Inlet and the great alluvial valley to the northeast, as well as the southern slope of the Alaskan mountains from Mt. McKinley to the Alaskan peninsula. A large part of this territory is ideal breeding ground and to the present writer's personal knowledge, examples of *Branta* are found there in considerable numbers during July, August and September, although no specimens were taken. There are no land barriers that would prohibit these birds crossing from Prince William Sound to Cook Inlet and hence it is not unreasonable to expect that *minima* and *canadensis* and Baird's so-called *occidentalis* interbreed and hence the "variations" and specimens that intergrade "inextricably."

It is now of interest to inquire if the frequently mentioned characters, white collar, black throat-stripe and abrupt termination of the color on the under parts occur in true *canadensis* and to what extent.

Among the Nebraska, Colorado and Louisiana specimens examined by the present writer, three birds, measuring, wing 19.12 in., culmen 2.16; wing 19.10, culmen 1.95; wing 18.55, culmen 2.02, show a sharp, clear-cut line of separation between the white and the color of the under parts. The first exhibits a very narrow half collar. Two specimens measuring, wing 18.75, culmen 2.10; wing 17.65, culmen 2.07, have broad, white collars. One specimen measuring, wing, 19.10, culmen 1.95, is unusually dark on the under parts and others are more or less mottled with grayish brown or brownish gray. In nearly all examples of this character there is a tendency towards abruptness of separation between the white and the color of under parts.

Regarding the black line on the throat, in two specimens it is almost continuous. Others show a pronounced line of mottling. In such specimens the feathers comprising the cheek-patches are invariably tipped with black to a greater or less degree and there is a tendency in such examples towards small wing or culmen measurements, but never both; as for instance, wing 17.70, culmen 2.31; wing 19.10, culmen 1.95, etc.

Three females with wing and culmen measurements within the limits of *hutchinsi* have the under parts typically *canadensis* in color, blending very gradually into the white of the anal region, and are equally referable to the latter race. It therefore, seems probable the variations in color and markings are due to causes other than subspecific differences.

Investigation of dates proves that birds taken in the early fall exhibited far more mottling on the throat, black tipping of the feathers on the cheeks and darker under parts. Such markings lessened in direct ratio to the progress of the season until late April specimens and breeding birds are typical of *canadensis* in every respect. Instead of a line or mottling on the throat, the dark area is reduced in late spring and summer specimens to a small dusky brown, or dusky and white "U" on the chin — in one instance the intermixture of white extends all the way to the bare area between the mandibles. An examination of the feathers compris-

ing the black throat stripe and those surrounding the white area of the cheeks proves that more than two-thirds of their basal length are white, and in summer specimens they are much shorter than in fall and winter birds. The gradual and finally complete elimination of such markings may, therefore, be assigned to *wear* and their absence or presence considered as an index to season, rather than to subspecific variation.

The majority of the specimens examined were received in the flesh, or merely roughed out. These prove that there is a continuous body and upper chest molt during the fall and winter months. By early April the dark or mottled underparts have disappeared and the transition to the white of the anal region is very gradual. Of seven specimens in breeding plumage, none show a trace of the white collar.

All of the specimens examined have a white spot below the eye, varying to some extent, but always present. Others have a few scattered white feathers above the eyes, being in two examples sufficiently numerous to suggest a band of mottling across the crown. One very large male exhibits an unbroken oval spot of white on either side of the crown, immediately over the eyes, not less than .25 by .50 in extent.

While it would appear to be shown that the dark under parts, black throat-stripe and white half-collar credited to the other subspecific forms also occur in *canadensis*, they are probably never so pronounced as in *minima*, unless the latter happens to be a light hybrid, similar to the type of *occidentalis*.

Finally, it is pertinent to inquire if the variations in markings and color noted above occur in other species of geese. In *Chen caerulescens* it is found that there are far greater differences in the markings about the neck and under parts than are shown by a comparison of *canadensis* and *minima*; and as in Swarth's comparison of the measurements of tarsi in *Branta*, it so happens that the tarsus of the smallest of five specimens exceeds by a full quarter of an inch that of the largest. One example shows the under parts, including the basal third of the neck and entire under tail-coverts to be a dark brownish gray or grayish brown, all the feathers being edged with tawny. The ordinary sooty color of the lower neck and chest is absent with the exception of a few scattered feathers at the

sides, but is present on the middle portion of the neck, mottled with white and extending to and over the crown, where it is replaced by the usual head markings. This bird is a female, taken in late March and moulting.

In *Anser albifrons gambeli*, the breast of one specimen is fully half black. A second is devoid of the slightest trace of black, the entire under parts of this bird being an unbroken, pale creamy-buff from neck to tail. The usual white of the forehead and lores is restricted to a narrow band, in no place exceeding .25 in width and does not extend to the gape. This white area is heavily mottled with black and the chin is the uniform color of the throat. Two examples intergrade. Of the four specimens examined the light phase above described has the shortest wing (15.62) and culmen (1.97), and the *longest* tarsus, (2.75).

CONCLUSIONS.

That it is not possible to identify a specimen as *hutchinsi* without disregarding strong evidence of its being either true *canadensis* or *minima*. That such identification is largely a matter of personal preference — so-called *hutchinsi* being merely examples of *canadensis* that present one or two measurements below the minimum or specimens that are the result of a cross between *canadensis* and *minima*. *Hutchinsi* is credited as occupying approximately the same range as *canadensis* but extending northward on the Pacific coast to Point Barrow and Flaxman Island. (See The Canning River Region, Northern Alaska, Leffingwell, page 65, 1919, U. S. Geological Survey Professional Paper 109). Swarth shows that "*hutchinsi*" attains its greatest abundance on the Pacific coast and that his "series at hand forms a perfect connecting link between *B. c. canadensis* and *B. c. minima*, the gradation between *hutchinsi* and *minima* in particular being so gradual that several specimens might with equal propriety be placed in either subspecies."

It appears to be established by several authorities that the breeding range of the representatives of the genus *Branta* overlap and it is the present writer's belief that *hutchinsi* is a hybrid intergrade between *canadensis* and *minima*. Contrary to Swarth's supposition that "we should expect to find at points farther east

but few intergrades and the majority of birds typical of *hutchinsi*," of the nearly forty examples of *Branta* from Nebraska, Colorado and Louisiana, none were found that did not show at least one measurement that exceeded the maximum of *hutchinsi* — all others being well within the limits of *canadensis* and hence referable to the latter. Swarth's conclusion, . . . "We should find here, as is actually the case, vast numbers of typical *minima*, a lesser number of intergrades, and comparatively few typical *hutchinsi*," must, therefore, be viewed in the light of strong evidence of hybridism, rather than subspecific difference.

Authorities agree that the measurements of *occidentalis* are within those of *canadensis* and the number of rectrices are the same. It is shown that the color and markings accredited to *occidentalis* also occur in *canadensis*. Coues evidently questioned the distinctness of Baird's type specimen and shows that it was much smaller than the minimum measurements now assigned to *occidentalis*. Swarth's description: "(2), slightly smaller size, that is, the maximum of *occidentalis* is below the largest *canadensis*. (3) Proportionally longer tarsus," will probably not be taken seriously by most ornithologists and hence, *occidentalis* appears to be without the slightest grounds for subspecific recognition.

It is, therefore, proposed that "*hutchinsi*" and "*occidentalis*" be eliminated as subspecific forms, that *minima* be raised to specific rank and that the occasional "inextricable" examples be recognized as hybrids.

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